Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Currently amended): An illuminator device for an optical image processing system, wherein the image processing system comprises an optical system requiring partially coherent illumination, and where the illuminator comprises:

a synchrotron source of coherent or partially coherent radiation which [[as]] has an intrinsic coherence that is higher than [[the]] a desired coherence;

a single holographic diffuser having a surface that receives incident radiation from said source wherein the holographic diffuser is a blazed phase device;

means for translating the surface of the holographic diffuser linearly in two dimensions along a plane that is parallel to the surface of the holographic diffuser with the proviso that the surface of said holographic diffuser is not rotated, wherein the rate of the motion is fast relative to integration time of said image processing system; and

a condenser optic that re-images the surface of the holographic diffuser to the entrance plane of said image processing system.

2. (Currently amended): The illuminator of claim 1 wherein the coherent [[of]] or partially coherent radiation is diffracted by the surface of the holographic diffuser to generate diffracted radiation containing diffracted orders of radiation and a zero order of radiation and the illuminator further comprises filtering means to block at least the zero order radiation from reaching the condenser optic.

3. (original): The illuminator of claim 2 wherein the filtering means also blocks all but the +1 order radiation or the -1 order radiation from reaching the condenser optic.

4. (original): The illuminator of claim 1 wherein the holographic diffuser is a binary amplitude device.

5. (original): The illuminator of claim 1 wherein the holographic diffuser is a binary phase device.

6.(Canceled)

7.(original) The illuminator of ~~claim 6~~ claim 1 wherein the holographic diffuser blaze is ~~quantize~~ quantized to between 3 and 8 levels.

8. (original): The illuminator of claim 1 wherein the condenser optic is a single reflective element.

9. (original): The illuminator of claim 8 wherein the reflective condenser element is spherical.

10. (Canceled)

11. (Currently amended): A method of modifying the coherence of a beam of radiation from a synchrotron source that comprises:

(a) directing the beam of radiation onto a surface of a single holographic diffuser wherein the holographic diffuser is a blazed phase device;

(b) translating the surface of the holographic diffuser in [[in]] two dimensions causing the surface to move only linearly in the plane of the holographic surface with the proviso that the surface is not rotated, wherein the rate of the motion is fast relative to the subsequent observation time; and

(c) re-imaging the holographic diffuser surface to an observation plane, wherein the re-imaging step employs a condenser optic.

12. (original): The method of claim 11 wherein the beam of radiation comprises coherent or partially coherent radiation that is diffracted by the surface of the holographic diffuser to generate diffracted radiation containing diffracted orders of radiation and zero order of radiation and the method further comprising the step of blocking at least the zero order radiation from reaching the condenser optic.

13. (original): The method of claim 12 wherein the blocking step also blocks all but the +1 order radiation or the -1 order radiation from reaching the condenser optic.

14. (Canceled)

15. (original): The method of claim 11 wherein the holographic diffuser is a binary amplitude device.

16. (original): The method of claim 11 wherein the holographic diffuser is a binary phase device.

17. (Canceled)

18. (Currently amended): The method of ~~claim 17~~ claim 11 wherein the holographic diffuser blaze is ~~quantize~~ quantized to between 3 and 8 levels.

19. (original): The method of claim 11 wherein the condenser optic is a single reflective element.

20.(original): The method of claim 19 wherein the reflective condenser element is spherical.

21. (New): An illuminator device for an optical image processing system, wherein the image processing system comprises an optical system requiring partially coherent illumination, and wherein the illuminator comprises:

a synchrotron source of coherent or partially coherent radiation which has an intrinsic coherence that is higher than a desired coherence;

a single holographic diffuser consisting essentially of a single surface that receives incident radiation from said source;

means for translating the surface of the holographic diffuser linearly in two dimensions along a plane that is parallel to the surface of the holographic diffuser with the proviso that the surface of said holographic diffuser is not rotated, wherein the rate of the motion is fast relative to integration time of said image processing system; and

a condenser optic that re-images the surface of the holographic diffuser to the entrance plane of said image processing system.

22. (New): The illuminator of claim 21 wherein the coherent or partially coherent radiation is diffracted by the surface of the holographic diffuser to generate diffracted radiation containing diffracted orders of radiation and a zero order of radiation and the illuminator further comprises filtering means to block at least the zero order radiation from reaching the condenser optic.

23. (New): The illuminator of claim 22 wherein the filtering means also blocks all but the +1 order radiation or the -1 order radiation from reaching the condenser optic.

24. (New): The illuminator of claim 21 wherein the holographic diffuser is a binary amplitude device.

25. (New): The illuminator of claim 21 wherein the holographic diffuser is a binary phase device.

26. (New) The illuminator of claim 21 wherein the holographic diffuser is a blazed phase device.

27. (New) The illuminator of claim 26 wherein the holographic diffuser blaze is quantized to between 3 and 8 levels.

28. (New): The illuminator of claim 21 wherein the condenser optic is a single reflective element.

29. (New): The illuminator of claim 28 wherein the reflective condenser element is spherical.

30. (New): A method of modifying the coherence of a beam of radiation from a synchrotron source to yield a partially coherent illumination having a desired coherence, said method comprising of:

(a) directing the beam of radiation from a synchrotron source of coherent or partially coherent radiation which has an intrinsic coherence that is higher than that of the partially coherent illumination, onto a surface of a single holographic diffuser wherein the diffuser consists essentially of a single surface that receives incident radiation from said source;

(b) translating the surface of the holographic diffuser in two dimensions causing the surface to move only linearly in the plane of the holographic surface with the proviso that the surface is not rotated, wherein the rate of the motion is fast relative to the subsequent observation time; and

(d) re-imaging the holographic diffuser surface with a condenser optic to an observation plane.

31. (New): The method of claim 30 wherein the beam of radiation comprises coherent or partially coherent radiation that is diffracted by the surface of the holographic diffuser to generate diffracted radiation containing diffracted orders of radiation and zero order of radiation and the method further comprising the step of blocking at least the zero order radiation from reaching the condenser optic.

32. (New): The method of claim 30 wherein the blocking step also blocks all but the +1 order radiation or the -1 order radiation from reaching the condenser optic.

33. (New): The method of claim 30 wherein the holographic diffuser is a binary amplitude device.

34. (New): The method of claim 30 wherein the holographic diffuser is a binary phase device.

35. (New): The method of claim 30 wherein the holographic diffuser is a blazed phase device.

36. (New): The method of claim 35 wherein the holographic diffuser blaze is quantized to between 3 and 8 levels.

37. (New): The method of claim 30 wherein the condenser optic is a single reflective element.

38. (New): The method of claim 37 wherein the reflective condenser element is spherical.